with an etch chamber 412. Chamber 412 is adapted to carry out process steps in accordance with signals received from processor 402 via ports 408. Preferably, computer 400 can control the composition and feed rate of the etch process feed gases, the process temperature, the pressure in the chamber, the time period for each process step, and other similar functions. Preferably, computer 400 is adapted to receive measurements that describe the conditions in the chamber or a condition of the substrate being etched, and adapt the process variables accordingly. This programmed control of process variables enables production of a predetermined device etch profile as required for a given use application. --

IN THE CLAIMS:

Please cancel Claims 1 - 4 and 11 without prejudice; amend Claims 5 - 7, 9, 10, 12, 13, 23, and 24; and add new Claims 27 - 53 as follows.

Claims not being amended are presented in italics below for reference purposes.

5. (Once Amended) A method of etching a shaped cavity in a substrate, wherein initial etching of said shaped cavity is performed using an initial process chamber pressure, wherein continued etching of the shaped cavity is performed using a process chamber pressure that is at least 25% lower than said initial process chamber pressure, and wherein etching of said shaped cavity is followed by an etch finishing step, wherein said etch finishing step is performed using a process chamber pressure that is within a range of about 80% to about 100% of said initial process chamber pressure.

6. (Once Amended) A method of etching a shaped cavity in a substrate, wherein the method comprises:

a) an initial cavity etch step during which said substrate is etched to form a shaped cavity using an initial process chamber pressure;

b) at least one additional etch step during which continued etching of said shaped cavity is performed using a process chamber pressure that is within a range of about 25 % to about 50 % lower than said initial process chamber pressure; and

c) an additional etch step following step b), during which continued etching of said shaped cavity is performed using a process chamber pressure that is at least 40 % lower than the process chamber pressure used during the performance of step b).

7. (Once Amended) The method of Claim 6, wherein etch step c) is performed using a process chamber pressure that is within a range of about 40% to about 50% lower than the process chamber pressure used during the performance of step b).

8. The method of Claim 6, wherein said method further comprises an etch finishing step, wherein said etch finishing step is performed using a process chamber pressure that is within a range of about 80 % to about 100 % of said initial process chamber pressure.

9. (Once Amended) The method of Claim 8, wherein said etch finishing step is performed using a process chamber pressure that is about 90% of said initial process chamber pressure.

10. (Once Amended) The method of Claim 6, or Claim 8, wherein said substrate comprises single-crystal silicon, and etching is performed using a plasma containing reactive fluorine species.

12. (Once Amended) The method of Claim 10, wherein said plasma source gas further comprises an additive gas selected from the group consisting of O_2, HBr, Cl_2, N_2, and combinations thereof.

13. (Once Amended) The method of Claim 6 or Claim 8, wherein etching is performed using a plasma generated from a source gas comprising a gas selected from the group consisting of SF_6, CF_4, Cl_2, HBr, and combinations thereof.

14. (Once Amended) The method of Claim 13, wherein said plasma source gas further comprises an additive gas selected from the group consisting of Ar, O_2, N_2, and combinations thereof, wherein said additive gas is provided in an amount sufficient to improve profile control during etching.

15. The method of Claim 13, wherein said plasma source gas further comprises an essentially nonreactive, diluent gas selected from the group consisting of He and Xe.

16. The method of Claim 14, wherein said plasma source gas further comprises an essentially nonreactive, diluent gas selected from the group consisting of He and Xe.

23. (Once Amended) The method of Claim 6 or Claim 8, wherein said method includes performing the following steps prior to said initial cavity etch step: etching said substrate to a predetermined depth to form a shaped opening, then forming a conformal protective layer overlying at least a sidewall of said shaped opening, wherein said protective layer comprises a material having a different etch selectivity than said substrate.

24. (Once Amended) The method of Claim 23, wherein said substrate comprises single-crystal silicon and said protective layer comprises silicon oxide.

27. (New) The method of Claim 5, wherein said substrate comprises single-crystal silicon, and etching is performed using a plasma containing reactive fluorine species.

28. (New) The method of Claim 27, wherein said plasma source gas further comprises an additive gas selected from the group consisting of O_2, HBr, Cl_2, N_2, and combinations thereof.

29. (New) The method of Claim 5, wherein etching is performed using a plasma generated from a source gas comprising a gas selected from the group consisting of SF_6, CF_4, Cl_2, HBr, and combinations thereof.

30. (New) The method of Claim 29, wherein said plasma source gas further comprises an additive gas selected from the group consisting of Ar, O_2, N_2, and combinations thereof, wherein said additive gas is provided in an amount sufficient to improve profile control during etching.

31. (New) The method of Claim 29, wherein said plasma source gas further comprises an essentially nonreactive, diluent gas selected from the group consisting of He and Xe.

32. (New) The method of Claim 30, wherein said plasma source gas further comprises an essentially nonreactive, diluent gas selected from the group consisting of He and Xe.

33. (New) The method of Claim 5, wherein said method includes performing the following steps prior to said initial cavity etch step: etching said substrate to a predetermined depth to form a shaped opening, then forming a conformal protective layer overlying at least a sidewall of said shaped opening, wherein said protective layer comprises a material having a different etch selectivity than said substrate.

34. (New) The method of Claim 33, wherein said substrate comprises single-crystal silicon and said protective layer comprises silicon oxide.

35. (New) A method of etching a shaped cavity in a substrate, wherein the method comprises:

a) an initial cavity etch step during which said substrate is etched to form a shaped cavity using an initial process chamber pressure; and

b) at least one additional etch step during which continued etching of said shaped cavity is performed using a process chamber pressure that is at least 25% lower than said initial process chamber pressure,

wherein said substrate comprises single-crystal silicon, and wherein etching is performed using a plasma generated from a source gas comprising SF_6 and Ar.

36. (New) The method of Claim 35, wherein said at least one additional etch step includes a second etch step which is performed using a process chamber pressure that is within a range of about 30% to about 50% lower than said initial process chamber pressure.

37. (New) The method of Claim 36, wherein said second etch step is performed using a process chamber pressure that is about 30% lower than said initial process chamber pressure.

38. (New) The method of Claim 37, wherein said at least one additional etch step further includes a third etch step during which continued etching of said shaped cavity is performed using a process chamber pressure that is at least 40% lower than the process chamber pressure used during the performance of said second etch step.

39. (New) The method of Claim 38, wherein said third etch step is performed using a process chamber pressure that is within a range of about 40% to about 50% lower than the process chamber pressure used during the performance of step b).

40. (New) The method of Claim 35 or Claim 36 or Claim 39, wherein, subsequent to said at least one additional etch step, an etch finishing step is performed using a process chamber pressure that is within a range of about 80% to about 100% of said initial process chamber pressure.

41. (New) The method of Claim 40, wherein said etch finishing step is performed using a process chamber pressure that is about 90% of said initial process chamber pressure.

42. (New) The method of Claim 35, wherein said plasma source gas further comprises an additive gas selected from the group consisting of O_2, HBr, Cl_2, N_2, and combinations thereof.

43. (New) The method of Claim 35, wherein said plasma source gas further comprises an additive gas selected from the group consisting of Ar, O_2, HBr, Cl_2, N_2, and combinations thereof, wherein said additive gas is provided in an amount sufficient to improve profile control during etching.

44. (New) The method of Claim 35 or Claim 42 or Claim 43, wherein said plasma source gas further comprises an essentially nonreactive, diluent gas selected from the group consisting of He and Xe.

45. (New) The method of Claim 35, wherein said method includes performing the following steps prior to said initial cavity etch step: etching said substrate to a predetermined depth to form

a shaped opening, then forming a conformal protective layer overlying at least a sidewall of said shaped opening, wherein said protective layer comprises a material having a different etch selectivity than said substrate.

46. (New) The method of Claim 45, wherein said protective layer comprises silicon oxide.

A10 Cont'd.

47. (New) A method of etching a shaped cavity in a substrate, wherein the method comprises:

a) etching said substrate to a predetermined depth to form a shaped opening;

b) forming a conformal protective layer overlying at least a sidewall of said shaped opening, wherein said protective layer comprises a material having a different etch selectivity than said substrate;

c) an initial cavity etch step during which said substrate is etched to form a shaped cavity using an initial process chamber pressure; and

d) at least one additional etch step during which continued etching of said shaped cavity is performed using a process chamber pressure that is at least 25% lower than said initial process chamber pressure.

48. (New) The method of Claim 47, wherein said at least one additional etch step includes a second etch step which is performed using a process chamber pressure that is within a range of about 30% to about 50% lower than said initial process chamber pressure.

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49. (New) The method of Claim 48, wherein said second etch is performed using a process chamber pressure that is about 30% lower than said initial process chamber pressure.

50. (New) The method of Claim 48, wherein said at least one additional etch step further includes a third etch step during which continued etching of said shaped cavity is performed using a process chamber pressure that is at least 40% lower than the process chamber pressure used during the performance of said second etch step.

A10 Cont'd.

51. (New) The method of Claim 50, wherein said third etch step is performed using a process chamber pressure that is within a range of about 40% to about 50% lower than the process chamber pressure used during the performance of step d).

52. (New) The method of Claim 47 or Claim 48 or Claim 50, wherein, subsequent to said at least one additional etch step, an etch finishing step is performed using a process chamber pressure that is within a range of about 80% to about 100% of said initial process chamber pressure.

53. (New) The method of Claim 52, wherein said etch finishing step is performed using a process chamber pressure that is about 90% of said initial process chamber pressure.